IN THE CLAIMS:

1. (original) A method comprising the steps of:

patterning a package material into a preform layout;

forming a package from said package material into a plurality of layers comprising at least a fuel reservoir interface layer, a layer containing a plurality of resistive heating elements, a microporous flow host structure layer containing a fuel cell, and a cap layer; and

incorporating microchannels into the package.

2. (original) The method of claim 1, wherein said plurality of layers further comprise an anode manifold support layer and a cathode manifold support layer.

3. (original) The method of claim 1, further comprising the step of patterning metal interconnects between each of the layers using screen print techniques.

4. (original) The method of claim 1, wherein the package material comprises molded plastic.

5. (original) The method of claim 4, wherein the molded plastic is Dupont Kapton.

6. (original) The method of claim 4, wherein the molded plastic is Sylgard Silicone.

7. (original) The method of claim 4, wherein the molded plastic is formed to have a thickness between about 25μm and about 1 mm.

8. (original) The method of claim 4, wherein the molded plastic is formed to have thickness between about 50μm and about 250μm.

9. (original) The method of claim 1, wherein the package material comprises ceramic green tape materials.

10. (original) The method of claim 9, wherein the ceramic green tape is Dupont 951 Green Tape.

11. (original) The method of claim 9, wherein the ceramic green tape is formed to have a thickness between about 25μm and about 1 mm.

12. (original) The method of claim 9, wherein the ceramic green tape is formed to have a thickness between about 50μm and about 250μm.

13. (original) The method of claim 1, further comprising the step of incorporating electrical feedthroughs that extend vertically between any two or more of the layers.

14. (original) The method of claim 1, wherein the package material is patterned using etch techniques.

15. (original) The method of claim 1, wherein the package material is patterned using molding techniques.

16. (original) The method of claim 1, further comprising the step of incorporating an air flow manifold into the package.

17. (original) The method of claim 1, further comprising the step of incorporating a fuel flow manifold into the package.

18. (original) A fuel cell package comprising:

a first layer having a current input, a fuel inlet and a first plurality of electrical leads connected to said current input;

a second layer having an anode manifold support structure, a fuel flow passage connecting to said fuel inlet and a fuel outlet;

a third layer having a manifold support beam, a resistive heater support structure, a fuel flow passage, an air flow inlet connecting to an air flow passage, and a resistive heater connecting to each of said first plurality of electrical leads;

a fourth layer having a fuel flow passage, an air flow passage, and a microporous flow host structure containing a thin film fuel cell formed from an electrolyte sandwiched between an anode and a cathode;

a fifth layer having an air manifold connecting to the air flow passage in the fourth layer, a fuel flow passage, an anode electrical feedthrough, and a cathode electrical feedthrough;

a sixth layer having an air flow passage connected to the air manifold in the fifth layer, a fuel flow passage, an anode electrical feedthrough and a cathode electrical feedthrough; and

a seventh layer having an air flow passage, a fuel flow passage, an anode electrical feedthrough and a cathode electrical feedthrough;

wherein , a resistive electrical feedthrough and an electrical feedthrough connected to a ground communicates through each of said layers.

19. (original) A fuel cell package comprising:

a first layer having a current input, a fuel inlet and a first plurality of electrical leads connected to said current input;

a second layer having an anode manifold support structure, a fuel flow passage connecting to said fuel inlet and a fuel outlet;

a third layer having a manifold support beam, a resistive heater support structure, a fuel flow passage, and a resistive heater connecting to each of said first plurality of electrical leads;

a fourth layer having a fuel flow passage and a microporous flow host structure containing a thin film fuel cell formed from an electrolyte sandwiched between an anode and a cathode;

a fifth layer having an air containing means to allow air to breath into the fuel cell package, a fuel flow passage, an anode electrical feedthrough, and a cathode electrical feedthrough;

a sixth layer, a fuel flow passage, an anode electrical feedthrough and a cathode electrical feedthrough; and

a seventh layer having a fuel flow passage, an anode electrical feedthrough and a cathode electrical feedthrough; wherein , a resistive electrical feedthrough and an electrical feedthrough connected to a ground communicates through each of said layers.

20. (New) A fuel cell package comprising:

a solid oxide fuel cell; and

a first patterned layer and a second patterned layer bonded to each other,

wherein the first patterned layer defines at least a portion of a first microchannel, the second patterned layer defines at least a portion of a second microchannel, the first and second microchannels are in fluidic communication, and the first and second microchannels are arranged to allow delivery of at least one of a fuel and an oxidant to the fuel cell.

21. (New) The fuel cell package of claim 20, comprising:

a high thermal isolation structure tailored to maintain an outer area of the fuel cell package at a low temperature during operation.

22. (New) The fuel cell package of claim 21, wherein the isolation structure maintains the outer area of the fuel cell package at a temperature less than about 55°C during operation.

23. (New) The fuel cell package of claim 20, comprising:

a high thermal conduction structure tailored to provide high thermal conduction.

24. (New) The fuel cell package of claim 20, wherein at least one of the first patterned layer and the second patterned layer has a thickness ranging from about 25 micrometers to about 1 millimeter.

25. (New) The fuel cell package of claim 20, wherein at least one of the first patterned layer and the second patterned layer comprises a material selected from the group consisting of silicon, ceramic green tape, ceramic, anodic alumina, and plastic.

26. (New) The fuel cell package of claim 20, further comprising:

a second solid oxide fuel cell; and

a conductive lead,

wherein the conductive lead connects the second solid oxide fuel cell to the solid oxide fuel cell.

27. (New) The fuel cell package of claim 20, further comprising:

a heat exchanger tailored to heat incoming cool gases by exhausted hot gas streams.

28. (New) The fuel cell package of claim 20, further comprising:

a catalyst material disposed in at least one microchannel and tailored to assist in converting incoming fuel to a byproduct.

29. (New) The fuel cell package of claim 28, wherein the byproduct comprises hydrogen.

30. (New) The fuel cell package of claim 20, further comprising:

an electrical feedthrough connected to the solid oxide fuel cell and to an exterior of the fuel cell package.

31. (New) The fuel cell package of claim 30, further comprising:

a sealed bond disposed around the electrical feedthrough.

32. (New) A method for forming a fuel cell package, the method comprising:

patterning a first layer and a second layer to create a first patterned layer and a second patterned layer, respectively;

bonding the first patterned layer and the second patterned layer together; and

assembling a solid oxide fuel cell including the first patterned layer and the second patterned layer,

wherein the first patterned layer defines at least a portion of a first microchannel, the second patterned layer defines at least a portion of a second microchannel, the first and second microchannels are in fluidic communication, and the first and second microchannels are arranged to allow delivery of at least one of a fuel and an oxidant to the fuel cell.